

TEST PLAN WORKSHEET

Title: Low-stress gradient testing

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Brief Purpose of Test

Gain operating experience at higher gradients for CMs at higher tap settings.

NL12, NL15, SL14, SL16,

Experience during previous stressing tests was of limited duration to discriminate longer timescale phenomena such as arcing and some waveguide vacuum conditioning.

Beam Conditions Required

beam off

Time Required

minimum useful 4 hours

maximum time available is more useful up to 24 hours

Preferred Time of Test

anytime

Staff Required to Execute the Test (including contact info)

normal operators

Test and Setup Procedures

PRELIMINARY SETUP STEPS

1. Establish that there is RF ON for each target zone and cavities are at nominal gradients.

Table 1: Low-stress gradient push

| Zone | Cavity | "CRMax start" | Push to |
|-------------|---------------|--------------------------|----------------|
| NL12 | 1 | 7.4 | 9.94 |
| NL12 | 2 | 9.4 | 11.13 |
| NL12 | 3 | 6.7 | 7.67 |
| NL12 | 4 | 9.0 | 11.00 |
| NL12 | 5 | 10.4 | |
| NL12 | 6 | 7.5 | |
| NL12 | 7 | 7.4 | 9.23 |
| NL12 | 8 | 7.2 | 8.68 |
| NL15 | 1 | 10.0 | |
| NL15 | 2 | 10.6 | 11.17 |
| NL15 | 3 | 9.4 | |
| NL15 | 4 | 7.8 | |
| NL15 | 5 | 8.9 | |
| NL15 | 6 | 9.7 | 11.07 |
| NL15 | 7 | 7.3 | 9.05 |
| NL15 | 8 | 8.1 | |
| SL14 | 1 | 8.3 | |
| SL14 | 2 | 6.3 | |
| SL14 | 3 | 7.6 | |
| SL14 | 4 | 5.5 | 6.65 |
| SL14 | 5 | 9.3 | |
| SL14 | 6 | 8.5 | 8.79 |
| SL14 | 7 | 10.5 | 11.07 |
| SL14 | 8 | 9.7 | |
| SL16 | 1 | 6.8 | |

Table 1: Low-stress gradient push

| Zone | Cavity | "CRMax start" | Push to |
|-------------|---------------|----------------------|----------------|
| SL16 | 2 | 9.0 | |
| SL16 | 3 | 5.1 | 7.20 |
| SL16 | 4 | 8.8 | |
| SL16 | 5 | 10.1 | 10.93 |
| SL16 | 6 | 9.8 | |
| SL16 | 7 | 7.1 | |
| SL16 | 8 | 10.5 | |
| SL17 | 1 | 7.4 | |
| SL17 | 2 | 8.2 | |
| SL17 | 3 | 10.9 | |
| SL17 | 4 | 11.5 | |
| SL17 | 5 | 7.9 | |
| SL17 | 6 | 7.7 | |
| SL17 | 7 | 7.5 | |
| SL17 | 8 | 9.1 | |

TEST PROCEDURE STEPS

1. Ensure that archiver is running.
2. Call up "highgradm" screen @ user/user1/reaves/dm/*.adl. This is a menu screen.
3. Open screens for target zones: NL12, NL15, SL14, SL16, and SL17.
4. Re-establish tuned operation of cavities in the modules at GSET = DRVH. Raise the DRVH values to "CRMax start".
5. Set the HOPR values to "CRMax start".
6. Raise GSET values by using the slider controls on the CMStress panel.
7. Allow the tuners to settle after each change.
8. If a cavity's tune seems uncontrolled, have rf tech or other qualified person tune up rf module parameters and consider manual tuning. [See the BRIAM SOS diagnostic process at <http://recycle.cebaf.gov/~doolitt/briam/sos.html>]

9. Expect stable operation, but reset faults unless fault rate is clearly more than 1/half hour.
10. after 8 hours of stable running at GSET = CRMax start levels, proceed for the indicated cavities, to the "Push to" levels for GSET.
11. Raise the DRVH values to "Push to".
12. Set the HOPR values to "Push to".
13. Raise GSET values by using the slider controls on the CMStress panel.
14. At the conclusion of the test or in preparation to begin beam ops, restore the nominal BURT rf snap file to reestablish original GSET. DRVH values.

Test Results

Table 2: Low-stress gradient push

| Zone | Cavity | "CRMax start" | Push to |
|------|--------|---------------|---------|
| NL12 | 1 | 7.4 | 9.94 |
| NL12 | 2 | 9.4 | 11.13 |
| NL12 | 3 | 6.7 | 7.67 |
| NL12 | 4 | 9.0 | 11.00 |
| NL12 | 5 | 10.4 | |
| NL12 | 6 | 7.5 | |
| NL12 | 7 | 7.4 | 9.23 |
| NL12 | 8 | 7.2 | 8.68 |
| NL15 | 1 | 10.0 | |
| NL15 | 2 | 10.6 | 11.17 |
| NL15 | 3 | 9.4 | |
| NL15 | 4 | 7.8 | |
| NL15 | 5 | 8.9 | |
| NL15 | 6 | 9.7 | 11.07 |
| NL15 | 7 | 7.3 | 9.05 |
| NL15 | 8 | 8.1 | |
| SL14 | 1 | 8.3 | |

Table 2: Low-stress gradient push

| Zone | Cavity | "CRMax start" | Push to |
|-------------|---------------|--------------------------|----------------|
| SL14 | 2 | 6.3 | |
| SL14 | 3 | 7.6 | |
| SL14 | 4 | 5.5 | 6.65 |
| SL14 | 5 | 9.3 | |
| SL14 | 6 | 8.5 | 8.79 |
| SL14 | 7 | 10.5 | 11.07 |
| SL14 | 8 | 9.7 | |
| SL16 | 1 | 6.8 | |
| SL16 | 2 | 9.0 | |
| SL16 | 3 | 5.1 | 7.20 |
| SL16 | 4 | 8.8 | |
| SL16 | 5 | 10.1 | 10.93 |
| SL16 | 6 | 9.8 | |
| SL16 | 7 | 7.1 | |
| SL16 | 8 | 10.5 | |